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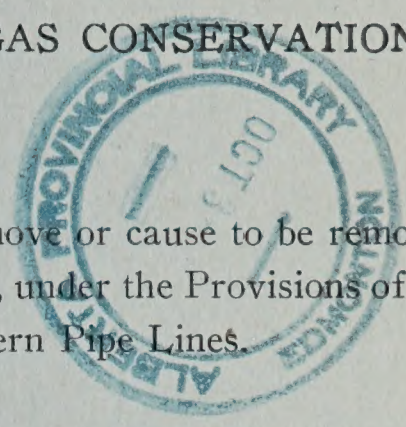
# The Province of Alberta

PETROLEUM AND NATURAL GAS CONSERVATION BOARD




Application for Permission to Remove or cause to be removed Natural Gas from the Province of Alberta, under the Provisions of the Gas Resources Preservation Act by Western Pipe Lines.

I. N. McKinnon Esq., Chairman

D. P. Goodall Esq.

Dr. G. W. Govier

***Session:*** September 27th, 1950.

**Volume** 3.

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# I N D E X

VOLUME 3

September 27th, 1950.

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THE CHAIRMAN: Mr. Mahaffy?

MR.MAHAFFY: Yes, sir.

.....

JAMES O. LEWIS, recalled, already sworn, cross-examined by Mr.Mahaffy, testified as follows:-

Q Mr. Lewis, just prior to adjournment time yesterday you had given me your views and your opinion concerning the export markets available to Alberta gas and also your view with respect to piecemeal exporting of that gas?

A Yes.

Q Now, this morning I would like to pursue a slightly different point with you, if I may. As I understand your evidence, and also the opinions of others, there are probably three types of gas production which will be available in Alberta, and probably is available here today. One is the production from the condensate field, if one may use that term, in Turner Valley, Jumping Pound and Pincher Creek, and, as I understand your evidence, those fields will have to be produced on a uniform basis, is that right?

A They would not have to be produced down in an exactly uniform basis, but they will have to be kept down to a reasonably uniform basis for the reasons I stated. You cannot fluctuate it to the extent that markets will fluctuate even in the Province or in export.

Q Then the second type of production is from gas, natural gas produced in connection with oil production, and that is subject to the same qualifications, I understand?

A Even to a greater extent.

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September 27th, 1950.

THE CHAIRMAN: Mr. Meharry?

MR.MAHARRY: Yes, sir.

.....

JAMES O. LEWIS, recalled, already sworn, cross-examined by Mr.Meharry, testified as follows:-

Q Mr. Lewis, just prior to adjournment the yesterday you had given me your views and your opinion concerning the export markets available to Alberta gas and also your view with respect to pipeline exporting of that gas?

A Yes.

Q Now, this morning I would like to pursue a slightly different point with you, if I may. As I understand your evidence, and also the opinions of others, there are probably three types of gas production which will be available in Alberta, and probably is available here today. One is the production from the condensate field, if one may use that term, in Turner Valley, Jumping Pound and Pincher Creek and, as I understand your evidence, those fields will have to be produced on a uniform basis, is that right?

A They would not have to be produced down in an exactly uniform basis, but they will have to be kept down to a reasonably uniform basis for the reasons I stated. You cannot fluctuate it to the extent that markets will fluctuate even in the Province or in export.

Q Then the second type of production is from gas, natural gas produced in connection with oil production, and that is subject to the same qualifications, I understand?

A Up to a greater extent.

Q Even to a greater extent?

A Yes.

Q And the third type of production is from what we call the dry gas fields?

A That is true.

Q And in the case of the dry gas fields there is,a great deal of fluctuation is possible?

A In most cases a great deal of fluctuation in the dry gas fields is possible.

Q Now, my client, Mr. Lewis, has filed a brief with respect to a proposed grid system, and this was filed in another application before this Board, but in dealing with deliverability of the fields a statement is made on Page 9 of this document, and I will just read a very brief part of it.

"The Kinsella field in addition to its use in supplying the Northwestern Utilities' system is to be used by the grid for peak load in the winter and repressured by the grid in the summer."

Now, that has reference, has it not, to storage possibilities?

A Yes.

Q I wonder, sir, if you would tell the Board what views with respect to the storage problem you have as it is connected to the problem of the uniform production of the condensate and the oil fields?

A As I see the situation in Alberta, taking into account the characters of the fields and the characters of the market, storage is going to be peculiarly important. You are going to have a large supply that will have to be produced quite

Q When do a person's rights

A Then.

Q Have the whole lives of productions to time when we will the

Sky Gas Fields?

A That is true.

Q And in some cases of the Sky Gas Fields there has been deal of filtration is possible?

A In most cases a great deal of filtration in the Sky Gas Fields is possible.

Q Now, my client, Mr. Lewis, has filed a motion with respects to a proposed drill system, and this was filed in another application before this Board, but in dealing with multi-volumes of the Fields's dimension is much on Page 2 of this motion, and I will just read a very brief part of it.

"The Kansas field is equipped to use an auxiliary the Northwestern utilities system to do the work by the grid for peak load in the winter and repressures by the land in the summer."

Now, that has reference, has it not, to storage possibilities?

A Yes.

Q I wonder, sir, if you would tell the Board what views with respect to the storage problem you have as it is connected to the problem of the uniform production of the Kansas and the oil fields?

A We I see the situation in Alberta, taking into account the characteristics of the fields and the characteristics of the market, strikes to seems to be peculiarly important. You are going to have a large supply that will have to be produced quite

uniformly, and to meet the problem of that reasonable uniformity of production and at the same time adapt it to the extremely variable loads, you will have to provide what, in effect, are storage facilities, and the only fields that are adapted to that, at least so far as we know now, are tye Cretaceous fields, the dry gas fields, and, of course, not all of them are well adapted, but it seems to me that it is going to be essential to couple the operations, on a large scale, particularly as the oil and gas increases, with a comprehensive storage project or projects.

Q Now, will it also be true, I mean to say that in addition to that necessity for the storage facilities, that there is a great need for provision for peak load demands on the export lines and on the domestic lines?

A On both the export and domestic. Perhaps not so violent fluctuations on export lines, but even the export lines can be expected to have large fluctuations.

Q Are you familiar with the climatic conditions in Winnipeg?

A I understand that Winnipeg will fluctuate just as violently as any of the cities in this Province. However, that would to some extent be equalized by the lesser fluctuations that would exist in the extension of the line into Minnesota.

Q Well, now, with this storage problem, and with this peak load problem, do you think it would be fair for me to say that these problems can be adequately met by an adequate grid system, if an adequate grid system is established in the Province?

A I think that an adequate solution can be provided, and that the grid system will be very helpful, and possibly wholly necessary before you get through. The big advantage

of the grid system from all standpoints is that it permits you to vary from one field to another, and not have to put everything in one pot, and it gives you the flexibility which you very much need under these conditions. Where you have these extreme fluctuations in demand, it is going to require the greatest possible flexibility in the supply and the means of getting that supply.

Q Now, one other point,connected with this same line of thought, Mr.Lewis. As I understand it, there is a great difference in the BTU content of the gas produced from the various fields in this Province, is that right, or do you know?

A The records show that to be so.

Q Now, does that lead to any complications in connection with t he problem?

A Yes, it very considerably complicates the problem. Some of these dry gasfields are of relatively low BTU, and the condensate fields have considerably higher, and the residue gas from fields like Leduc are very high. I was informed by one of the engineers of Imperial Oil Company that their residue gas went up to 1300 BTU. It is essential that you have a reasonable uniformity in BTU throughout the year, particularly with respect to domestic uses.

Q Why is that?

A Your burners are adjusted for a certain BTU and if you vary widely from that they become very inefficient. For example, if it is adjusted to 1000 BTU and you in the summer try to supply them with 1300, you have the bottom of your pot soon covered with soot, and it will not be feasible to regulate the mixtures in burners month by month throughout the year. So that this supposition that you can entirely shut off the gas from the Cretaceous fields in the summer and take only

from the casing head gas is not feasible by itself. Of course, you can inject air into the high BTU gas and bring down its BTU content, but that is not a desirable solution. The much better solution, if it can be worked out, would be to regulate through storage in some way in which the BTU can be averaged out throughout the year with the low BTU gas.

Q And may I suggest that that desirable mixing facility is provided through a grid system?

A It would be very helpful. In order to work out these problems of flexibility you have got to have a varied and as large a number of fields connected with as large pipe line capacities as possible to give you the greatest possible flexibility.

Q Now, Mr. Lewis, yesterday you were being cross-examined by my friend, Mr.Fenerty. I am going to take just a moment to read a couple of questions and the answers that passed between you at that time. Page 143 of yesterday's transcript, about two thirds of the way down the page, Mr. Lewis, where the reporter was asked to repeat a question, which he did, as follows:

"Q Is it your opinion, Mr. Lewis, that the way to give local consumption protection as to reserves, is to have certain areas allocated to them?

A You mean, is my opinion that each community should have allocated specific reserves?

Q MR.FENERTY: Is it your opinion that the most adequate way to protect that local community as to reserves is to allocate a particular area for their consumption?

A It is not my opinion.

"Q That is the answer to that. What,in your opiniom, is the way to protect them as to reserves?

A The best way to protect the communities of Alberta would be to put in a grid system so that instead of being dependent on one reserve, and no matter how carefully you estimate reserves, there is always some chance of error, that they would draw upon a common supply, therefore they are measuring or averaging out the areas,they are sharing those, and there is a more durable supply, and there are various other things which can happen to a field besides wrong estimates of reserves.

Q I see?

A They get into producing troubles, so that instead of relying upon only one field for any community I would advise them not to if they can avoid it, and I would advise them to tie into a general system.

Q I see. Yes, And at whose expenses would such a grid system be provided?

A I presume that everybody who benefitted from the grid system would pay their just proportion of the expense."

Now, Mr. Lewis, I wonder if you would take just a few minutes with me, Mr. Fenerty having opened that line of thought, would you care to enlarge in some way on your views with respect to that theory?

A You mean as to sharing of expense?

Q Yes, and sharing of reserves particularly?

A Yes.

Q The spreading of the risk, if I may put it that way?

A Well, I think I can reply to that most effectively by quoting the old adage that there is safety in numbers. I don't know whether I could enlarge on that much. It seems to me that that factor and the big need in the Province for flexibility are sufficient answer to the question of whether the grid system is desirable or not. I think, at least, to my mind, it obviously is. We have not made a detailed study of it, but we certainly agree that in principle it is desirable, and we have seen no reasons so far why it is not feasible. As far as the expense is concerned, why it seems to me the obvious thing is that the general principle that those who benefit should pay in proportion holds good.

Q Yes? Now, on the question of expense, isn't it likely that if a well-planned grid system were installed, that expense would in the long run be saved?

A Yes. You see, at this moment there is no very great need for a grid system. There would be advantages but it certainly is not essential at the moment, but as the demands within the Province become greater, and as the export gas, and as the proportion of gas from oil wells and from these what we might call inflexible reserves are increased, the need for a grid system becomes greater and greater. At first some of these communities may feel that they do not need a grid system, and possibly they would not for several years to come, but in the long run I am sure they are going to benefit, all of them without exception, for the reasons that I speak of, and I think that the communities should take a forward and long view look

at these things.

Q And such a system, I take it, would avoid the possibility and the probability of duplication of lines in the Province?

A You would have a large part of the seeming increased cost in the end be taken up by a saving in the duplication of lines and being able to work out a system which can be maintained much more easily and cheaper than could a system which would result in many more smaller lines to market the gas. The present means of gathering and transporting the gas, while it may be adequate in size as of today, I will assume this line will have to be extended and that that gas will have to be taken from new sources of supply.

Q Have you had any experience in your country of a similar nature?

A Yes, I am very familiar with that. Some States are just crisscrossed with pipe lines put in by different companies, individual companies, and we have a very large duplication of facilities, both in the gathering of the gas and its transportation. Had there been a grid system installed in the first instance, obviously the total cost of the gathering of the gas would have been materially reduced which in the end would have meant a much lower cost to the consumer.

Q Now, Mr. Lewis, I trust I am not putting any words into your mouth, and will you tell me if I am if I suggest too that from what you have told us your opinion is that in a long range view of the problem it would be well to have the Alberta fields pooled and a grid system installed?

A I think Alberta has quite an unique opportunity to keep away from the duplication of the mistakes which have been

made elsewhere. In connection with a grid system, I would like to call your attention to the long established grid systems that have been used in the conducting of electricity. You have a splendid example of that on the West Coast here and throughout the United States you have grid systems. As a matter of fact, I understand that electricity can now be transmitted from the West Coast to the East Coast. You can draw upon your experience in connection with the transportation of gas from the experience of electrical companies.

Q There is one other point I would like to develop with you. In the course of this hearing we have heard a great deal about load factors, dealing with the question of load factor in consideration of the cost of gas. If a grid system - I am not talking about any particular one, but if a grid system were instituted what would be the load factor incident in the moving of gas through the grid?

A I believe a properly designed grid system, together with properly designed storage, would result in a much higher load factor. The cost of the transportation is largely in amortization and maintenance of equipment. That is the largest single expense and that expense has to be divided by the cubic feet of gas transmitted through it. If a line is being operated at 50% the expense per thousand cubic feet, so far as that item is concerned, is just double what it would be at 100%. It is to the interests of the consumer to do everything possible to maintain the highest load factor, so that the cost of the transmission is borne by a greater quantity of gas.

Q Would you feel in this grid system we have been discussing, with its storage facilities, its peak loads and so on and so forth, that a high load factor could be maintained by a grid system?

A I do. That is the same thing as saying that you could perform the same service with less investment in pipe line facilities.

Q Now, do I understand then, and this is in brief a summary, that in your view a grid system would go a long way to insure continuity of local supplies in the province?

A Yes, I do. I think that I made mention the other day that I believed that in my opinion the grid system was most likely to reach to all sources of supply, possibly some sources which never will economically be brought to market. For the same reasons the grid system would be more likely to reach all communities, some of which may be overlooked by other systems, which may be a long way away from the present centres of consumption.

Q And one other point is it would provide the necessary machinery to effect the storage of gas in the Province?

A I would also like to add and volunteer this that a grid system, with the inter-connecting cross lines it would naturally tend to the provision of continuity of service in the winter because most of the larger communities at least would be capable of being served from more than one direction, so that breakage would be less dangerous.

Q Now another question, Mr. Lewis. You will gather from the name of the Board that is sitting here, the Conservation Board, that one of the, perhaps, vital interests in this Province is the conservation of gas. Would I be right in

saying that a grid system such as we have been talking about, with storage facilities and peak load provisions and so on, would be an effective agent in the conservation of natural gas?

A Yes, I believe it would. I think it would aid conservation in a number of ways. One of them is that it provides outlets for more fields. That in itself is a measure of conservation. Isolated fields, particularly isolated oil fields, there might not be anything that could be done with the gas except to blow it in the air, unless there is a pipe line. It would be ineffectual in some cases to run to them with a separate line. So it would be more likely there would be less of these isolated areas with a grid system. Also, the very fact you would have this flexibility. You could transport gas from one area that has a local problem to another area. I believe it would be very helpful from the standpoint of conservation.

Q Thank you, very much.

CROSS-EXAMINATION BY MR. S. B. SMITH.

Q Mr. Lewis, costs of things are rising in the United States are they?

A Very much so.

Q How long has that been going on?

A As long as I can remember.

Q Do you see any indication of that trend changing?

A Well I am not a prophet, but I do not think it is going to change for several years.

Q You did mention some consideration had been given to the transport of gas from Texas to the Pacific Northwest, I

think you said?

A My firm made preliminary investigations of that.

Q Just preliminary?

A Just preliminary, nothing more than that.

Q Did you do that yourself?

A No.

Q You have no personal knowledge of it at all?

A Other than I talked with men in my organization who made it, and discussed it.

Q How many years ago was that work done?

A About four to five months ago.

Q Four or five months ago?

A It might not have been that long, it might have been as recently as three months. I don't remember exactly.

Q Are you suggesting in view of your consideration that it is not economically feasible at the present time to take gas from Texas to the Pacific Northwest?

A All I can say is our conclusion was, and that is of course our opinion, there can be different opinions, that it is very dubious, and in our opinion it was unsafe to go there.

Q What is the price of fuel oil now in Seattle?

A I do not know the exact figure. I believe it was, if my recollection is correct, it was $2.20 or $2.40 a barrel.

Q Your conclusion, as stated yesterday, was at $2.40 - and these are your own words - you could sell gas in competition. That is your statement as given yesterday?

A I do not remember what my exact words were.

Q I will read this statement to you. "That is at $2.40 for fuel oil in Puget Sound you could sell gas in competition."

A You could sell gas in competition?

Q You could sell gas in competition. Then you went on to say, "That is my recollection of the figures, but as recently as a year or so ago the price of fuel oil was considerably less than that and with those lower prices which may recur, you cannot compete against fuel oil in the market." That is what you said. Those are your words.

A I think that is substantially true. It was pretty close. My recollection is at $2.40 the competition was quite close. When they got down to much lower than that you could not compete with fuel oil. I do not remember just where we say the break would happen.

Q You do not pretend yourself to have made a detailed and thorough examination?

A No.

Q You are speaking in a general way only?

A Right.

Q And upon second hand knowledge given you by some men in your organization in the past?

A You can say that, yes. That is right.

Q And you discussed with Mr. Mahaffy yesterday the potential markets, somewhat briefly, for export gas from Alberta. As I understood your evidence you referred to three possible markets. One to the Minnesota-Dakota area, Montana, and the Pacific Northwest.

A And also Manitoba and Saskatchewan.

Q Yes, Manitoba and Saskatchewan as part of the Minnesota-Dakota area?

A Yes.

Q I think you tended to suggest that Alberta should get into

that market first which was most vulnerable to competition from Texas gas?

A That is right.

Q So then, I presume, it would logically follow that if the Pacific Northwest is vulnerable from the point of view of the export of Texas gas, perhaps that is the first place that Alberta would get into? That would seem to logically follow?

A Well it was not my conclusion it was the most vulnerable. I say it is vulnerable, or possibly vulnerable.

Q I am not asking you at the moment whether it is vulnerable or not. I am asking you to agree with this general proposition which is that Alberta should first capture that market which is most vulnerable because of competition from other fields?

A Yes, sir.

Q And if the Pacific Northwest is vulnerable to a supply of gas from other fields, that, following on your principle, Alberta should get into the Northwest area first, would that not follow?

A I do not believe in your "if". If it were true it would be right.

Q I did not ask you if you believed in my "if", but if it is vulnerable then according to your principle Alberta should get into that area?

A That would be the logical answer.

Q You did not think we had to worry about Montana because the market in Montana, you said, was small and it is not in any danger of competition from any other field?

A At the moment.

Q At the moment there is no natural gas in the Pacific Northwest at all, is there, so far as you know?

A Not of any consequence.

Q There is no natural gas of any consequence in Montana, or is there?

A They have gas in Montana, throughout Montana.

Q In comparatively small quantities?

A Yes.

Q There is no natural gas produced in the Minnesota-Dakota area, is there? Or perhaps there are small quantities.

A I do not know of any.

Q Is there any natural gas supplied into the Minnesota-Dakota area from anywhere?

A Yes.

Q Where does it come from?

A Minneapolis is being served by the Northern Natural Gas Company from fields in Kansas, Oklahoma and Texas.

Q How many lines are there in there?

A Only one I know of, the Northern Natural.

Q Is there one line or two lines or do you know?

A I do not know whether it is looped or not. I cannot say.

Q That field has already been entered then to some extent?

A The southern part. I understand - I am not sure of this information, but if you want it I can give it to you - I understand Northern Natural have made application to serve Minnesota and have made application to the Federal Power Commission.

Q You do not know how long ago?

A Well, it is within recent years.

Q You are really not familiar with all the gas line facilities in Minnesota so far as gas lines coming there are concerned?

A I am in a general way. It is not a question of gas lines so much as a question of supply. In a general way I know that the supplies of gas from Northern Natural are not considered to be adequate for extending their services. I also know in recent years they were negotiating to bring gas up from Texas. I mean, from the Gulf Coast area of Texas.

Q Thank you.

CROSS-EXAMINATION BY MR. NOLAN:

Q Just one or two things I wanted to ask you, Mr. Lewis, for my own information, if you would be good enough. In your calculation in your report in Exhibit No. 6 there is a heading "Petroleum Consultants" and under that "Gas not available." And in the column immediately below that, in parenthesis, is what is known as committed gas.

A At what page?

Q In any of your tabulations, but if you look at the table I am looking at it is the one that follows page 30, between that and page 31.

(Go to page 213.)

Q I was not going to ask you about the particular figures, I was just going to ask you about the build-up of this table. Looking at that page, if you have it before you, under the heading "Gas Not Available" there is in parenthesis what is called committed gas?

A Yes.

Q What does that mean, exactly, committed gas?

A It means that it is reserves which we were informed were committed to certain communities. That Calgary, for example, had Turner Valley, we understood, and a contract to take gas from Jumping Pound. Now, the contract we saw did not cover all the gas. There were also two other small fields, to my recollection, in the southern part of the States, so we considered that they were committed.

Q Well, does there have to be a contract before you put it under the heading "Committed Gas"?

A We did not go into the contracts, Mr. Nolan, except in the case where we read the Jumping Pound contract, but we assumed this, that where a community had already taken gas from these fields under contract, even if the contract did not cover the total reserves, that probably the gas would be held for their benefit. That applies to such a field as Leduc, where only a portion of the gas is contracted.

Q So what you intended to convey was that where a field is presently being used by a community you took it upon yourself to say that it was a committed gas field?

A We assumed it would not be available for export.

Q And I was also going to ask you, there is a large amount

of this gas that is not available for pipeline purposes and the total is very considerable having regard to the other totals of the estimated marketable gas and the gas available for pipelines?

A That is correct.

Q How does that fit in with the grid system?

A I beg your pardon?

Q How do you reconcile that situation with a grid system? Wouldn't gas have to be available all over to make a grid system workable?

A Well, it seems to me that once a grid system is in that these communities would take another look at it and unless they are under compulsion, which I don't know, they would decide what to do about that. I would think the sensible way would be instead of having certain definite fields reserved for them that they would have, say, a quantity of gas equal to those reserves allocated to them through the grid system. That would be one way. Certainly there are going to be some hard problems to work out in establishing this grid system by reason of these established interests.

Q But in your professional opinion, Mr. Lewis, it is a better thing to have all the gas available for your grid system?

A I believe so.

Q Now, you said something a moment ago about compulsion. You mean by that that they would be compelled to take the gas from where they were told they could get it, the communities?

A Well, I don't know what authorities you have up here, but I mentioned that as being a possibility, that maybe there is some authority up here that will set those dedications aside and put it all under one pot.

Q Do you think it is a good thing for one company to have a complete monopoly of the gas gathering system?

A Well, that goes into a question more or less of policy and politics and in any monopoly like the company serving a community there is this matter of the question of whether it is good policy to have monopolies, and it has been solved here and in the States by regulation.

Q What do they do in your own State, Mr. Lewis, Texas?

A Well, they have two regulations there, one is by the State and where it concerns any line or facility which crosses a border into other States it is also regulated by the Federal Government.

Q But within the State itself there is free and open competition so far as gas gathering is concerned?

A Texas is rather peculiar in that they have gone in less for establishment of monopolies in the way of public facilities than most States. Now, in most States, California, for example, the public utility bodies take the position that it is better to have one company in a community serving it if it can do so adequately than to allow a lot of competing companies to come in with duplication of services. In Houston there are two companies serving gas there.

Q Which do you favour, which system, the California or the Texas?

A I think the California system is better in the case of public utilities. It is better to avoid duplication of services and put it under one company and one system. But of course that requires that there be close regulation in the protection of public interests.

Q You mean the Government must be on the alert at all times?

A Yes, I think so.

Q I am going to ask you another thing. What is the largest field with which you are aware where gas is stored?

A Oh, the largest field - - I do not know which would be the largest field. I rather suspect that the La Golita field in California would be the largest.

Q What about the El Paso field?

A I am not familiar with it.

Q Are you familiar with the Jal field?

A No, not in detail. I know where it is. I know a little bit about it.

Q Do you know the capacity of it?

A No, I do not.

CROSS-EXAMINATION BY MR. MACLEOD:

Q Mr. Lewis, I would like to ask one or two questions connected with your statements to my learned friend, Mr. Mahaffy, with regard to less vulnerable and more vulnerable markets. By these terms I suppose you mean that there are certain districts such as Montana and West Coast for which we are the natural supplier, the most natural supplier?

A Yes.

Q And certain other districts such as Minnesota and North Dakota and Winnipeg and that part of the country where the more natural supplies are from Texas?

A By reason of distance. You have an economic advantage by reason of distance.

Q And you have, I presume, noticed the interest taken in this question by the Right Honourable Mr. Howe?

A I am sorry, I could not hear.

Q You have heard the letters read which show that the Right Honourable Mr. Howe is interested in this matter?

A Well, I heard the letter read but I must confess I did not try to digest it.

Q I would like you to tell me, Mr. Lewis, what merit there is in this suggestion, that in view of international conditions and common defence problems of the United States and Canada that it would be advantageous for all concerned and ultimately for Canada and Alberta that the vulnerable markets, the less vulnerable markets, should be served first, that is, the markets that we can serve most efficiently and economically should be served, leaving the other more vulnerable markets to the people who can supply them efficiently and economically?

A If I understand your questions, the first one was that whether I believe that what you might call the pressure of war conditions should be considered here and what weight to be given it. Of course, I am not in a position to weigh those things, but I think that defence would come before anything else. Now, whether it is necessary that Alberta gas be used for that defence as against Texas

gas,and those questions, I do not think I am quite competent at the moment to pass upon or it would not be any good for me to anyhow because that is going to be decided by others. Now, as to the second part of your question, I am not quite sure that I understood it but I think about the only thing I can repeat is that from the standpoint of Alberta, the desirability is to take up first those markets which are most vulnerable, which are most likely to be taken away from them if they do not act quickly.

Q You base that opinion, I presume, on a strictly economic standpoint?

A Well, that is what I base it on because I am not competent to go into the others, I do not know enough about it.

CROSS-EXAMINATION BY MR. C.E. SMITH:

Q Just a few questions, Mr. Lewis. I think what I had in mind has been dealt with by one of the other gentlemen preceding me but I wonder in a few moments would you take your submission, Exhibit 6, and first refer to page 1, at the bottom of the page headed "Introduction",

> " For the past several months we have carefully studied the natural gas reserves of the Province of Alberta and their relationship to the question of maintaining an ample supply of gas to meet present and long term future requirements of the Province....."

Let me pause there a minute. I take it you realize that certainly as far as this Board is concerned that by the

Statute under which they are presently operating that the question of maintaining an ample supply of gas to meet present and long term future requirements of the Province is what I might call their most important consideration?

A Yes.

Q I mean, I do not know if you have actually read the Act but you know, in any event, that is their primary and most important consideration?

A I do not believe I read the Act but I did understand that that was the first point for consideration by the Commission, as to whether there was an exportable surplus.

Q I would like to leave it in the language you have got it in, "the question of maintaining an ample supply of gas to meet present and long term future requirements". Now, I think you told other people here that insofar as your study is concerned with respect to that, you have not attempted to give it the study which might allocate areas of gas, gas areas I will call them, to communities or anything of that nature whatever. Your whole study has been on the idea that what you have been discussing is a grid system having an overall amount which could be properly distributed, is that right?

A Well, we took into account the reserves which were committed, and we also commented on the variability of the commitments of the various markets in relation to their needs. Now, I might say that other than public statements this matter of the long term future requirements of the Province is a matter of setting up a standard of what is required, which of course we could not set up

for them, but we did express an opinion that taking into account the potentialities of the Province we thought the present reserves committed to the cities provided that they were equitably distributed should be adequate. That is, it would provide an assured supply for enough years ahead that it would seem to us, taking into account new discoveries and the assignment from time to time of additional reserves of gas ahead of the needs, that the Province could be met for the 50-years that we have heard mentioned in the press and I believe in statements of the Premier.

Q Let me put this to you, other than submission Exhibit 6 by you ,no further submissions or additional submissions with respect to your careful study of the question of maintaining an ample supply of gas could present a long-term future requirement of the Province?

A Only our work papers.

Q I mean, will that assist this Board even if those were available any more than this submission?

A Well, I do not know whether they would or not. We have them here for inspection by anyone who is concerned.

Q What I am getting at is, Mr. Lewis, keeping this basically in mind, the question of the maintenance of an ample supply with respect to this Province, have you anything prepared or preparable that would assist this Board any more than the submission, Exhibit 6?

A Well, I do not believe the work papers would be of very much more assistance than what we have given here. Of course, they supply the detail of the mathematics of

computations. But we have set forth the main factors in this report, at least, the conclusions.

Q Is there anything that would assist this Board with regard to the statement, "a careful study of the relationship of maintaining this ample supply"?

A We made that careful study but we made it in this way, in the way it is set out in this report, and I might say that from our own viewpoint, which may not be the viewpoint of the Board at all, we consider the potentialities of the Province much more important than just what has been found up to this time. I might also add this, that when we considered first coming up here we first thought of making a complete detailed study field by field.

Q May I interrupt you. You have not done that?

A No, we have not done that for reasons which are stated here. And I might add, those additional reasons that we found in going around these companies, that apparently they were getting somewhat tired of the procession of engineers and geologists coming in there having them go searching for information, and we found certain resistance.

Q What companies would you refer to, producing companies?

A They are generally. I would not pin it down to any one company. We found that attitude.

Q Possibly by Gulf, Shell, Imperial and so on?

A All those companies. We found certain resistance. We found less resistance from the Gulf. I would not like to name the companies, I do not think that would be fair to do.

Q That type of company?

A Pardon?

Q That type of company I have mentioned?

A Well, I won't say any more than that Gulf has given us full information that they had on Pincher Creek.

Q In any event, one of the reasons you could not carefully study the things I have just mentioned is because they were getting tired of giving information?

A When we say "careful study" we mean the larger aspects of the case. We did not consider it necessary to go into a great deal of detail on these fields which were already committed, for example, and as for the other fields which were not committed, they were in such a state of development that it was - - we worked as far as we could on the data we had but the incompleteness of the development did make it impossible to come out with reliable firm reserves.

Q Your interpretation of committed fields, if I may use that, is as given by Mr. Nolan and Mr. Fenerty?

A What we understood by that, either committed by contract or by implication of certain markets.

Q Carrying on with that paragraph, the very last line of page 1:

> ".....while, if possible, at the same time supplying a major gas transmission pipe line to export gas out of the Province to serve market demands in other areas."

Was that deliberately used in the singular, that word "line", or is merely illustrative?

A No, I do not think so.

Q And we can not interpret that as meaning in any event no

matter what we have got that there could be only a question of one major line?

A No, we did not mean that. That was more of an illustrative statement.

Q I thought possibly that was so. I wanted to clear that up. One small thing, you do not mind if we change Mr. Liesemer's initials to "G.E.G." instead of "G.E.S.", the last paragraph on page 2, Mr. Leisemer's initials to "G.E.G."?

A "G.E.G."?

Q "G.E.G.", I think is correct.

A Well, I apologize to Mr. Leisemer.

Q Referring now to the bottom of page 3, where you say:

" Our review of the several reports that have been submitted to this Board."

I take it you are referring there to what may be contained in the various exhibits as well as oral evidence as contained in the various transcripts? Is that what you mean?

A We did not go through the transcripts. We took the exhibits like Hume's and Nauss's and the others. That is to what we refer. We did not go through all the transcripts.

Q Probably you had a look at the pile of them and decided you would not try?

A We had enough to go through without the transcripts.

Q In any event, you come to this question of the three main categories,

"(1) Those now committed to Alberta markets;

"(2) Those which for one reason or another would not be attractive for export;

(3) Those which would be attractive and which, presumably could be made available for export."

I am not going into this further with you because it has been dealt with by other people, but you do say the first category includes the oil fields of Bow Island, Medicine Hat, Foremost, Turner Valley, Viking-Kinsella and the new field of Jumping Pound?

MR. BRUCE SMITH: Old fields.

(Go to page 225)

MR.C. E. SMITH: "The first category includes the old fields of Bow Island, Medicinc Hat" - did I say "oil"?

MR. S. B. SMITH: Yes.

Q MR. C.E. SMITH: May I suggest this, Mr.Lewis, that I take Medicine Hat, you have no idea of committing that as you havecommitted that to Medicine Hat or allocated it to the City of Medicine Hat?

A We assumed that it was committed to Medicine Hat.

Q And I take it you assume that from information you have received generally from various people, is that correct?

A That is right.

Q And taking Foremost, Turner Valley and Jumping Pound, you have made the same assumption with respect to those being allocated to Calgary, is that correct?

A Yes. We knew that Jumping Pound and Leduc were not completely committed by contract, but we assumed by implication those reserves would go to the, in the one case to the Edmonton area and in the otcrr case to the Calgary area.

Q Did you see contracts with respect to Edmonton, with respect to Jumping Pound or Leduc, I am sorry, or is that information given to you?

A Yes, we saw the contract on Jumping Pound, we did not see the one on Leduc.

Q Probably there wasn't an actual contract?

A I beg your pardon.

Q Probably there wasn't an actual contract?

A I do not believe at the time that we looked into it that there was an actual contract.

Q So that you can give us no further information than you

have already given with regard to this question of committed fields?

A No. I think that is a legal question which I do not think we are competent to go into fully.

Q But, I mean, with respect to any evidence that you have seen with respect to committed fields, that is an assumption that you make?

A Yes, that is an assumption that we make.

Q You say there following, in the same paragraph, "With the exception of Jumping Pound these fields supply enough information to provide reliable estimates of gas reserves." As a matter of clarity, you direct your mind to Jumping Pound rather than these other fields with respect to providing reliable information? Is Jumping Pound not in the same category as those mentioned?

A With respect to information, no.

Q Well, probably, I am not trying to criticize, Mr.Lewis, but does that mean that the others might be in what we call proven and Jumping Pound in probable, or can you help us any in that?

A Jumping Pound is in the class that a certain amount of it can be considered proved, but the field as a whole has to be considered as probable as there are only two wells drilled so far, or, rather, two wells and I believe there is a dry hole at one side, but there is not enough information from which to derive reliable opinions as to the total reserves in that field.

Q Well, I do not want to press you. Would you categorize that as probable or what?

A A certain quantity is proved.

Q Yes?

A But the major portion is still in the probable class in our opinion.

Q I take it you would want considerably more information about what we call the Jumping Pound field by way of exploratory drilling before you would put it in the class of these others?

A Yes, there would have to be several more wells before you could put it into the proved class.

Q Then you conclude that paragraph by saying, "We have checked the estimates and the data and we believe a full detailed study on our part would also result in our substantial agreement." Now, you say "we have checked estimates", by that I take it that you mean you have had information or occasion to see the estimates made by Dr. Nauss and by - in any event the people that have given estimates here, is that correct?

A Yes, we made what might be called first of all a check of the methods pursued and what we might call a spot check of such things as sand thicknesses and so on, and came to the conclusion that we could see no large errors in the estimates or the methods, and we concluded if we had gone into it in full detail we probably would not have come out with exactly the same figures but we would have come out with figures which were pretty close to it.

Q I take it you did not go through, by the language that you use, a full detailed study and arrive at something of your own by way of these estimates?

A We did not. We did not think it was worth while in that we did not consider it applicable to export gas.

Q That is what I wanted to get at, your reasons, and it was because you did not think Jumping Pound was applicable to export gas, and you assumed that these figures were sufficient for your purposes, is that correct?

A That, and that others had made estimates. Now, as far as Jumping Pound is concerned that, of course, is a field on which there has been a wide difference of opinion, but we did not go into that. We went into that as closely as we could and came up with the information that Mr. Davies' estimate was probably about as close as could be made at this time.

Q Do you remember what it was?

A 401 recoverable, billion.

Q That is about the lowest one you saw, wasn't it?

A No, we saw another one.

Q Whose was that?

A Mr. Cook's.

Q That is something we have not heard of except in this submission so far as this Board is concerned. Has he got an estimate lower than Davies'?

A Yes, he has got an estimate lower than Davies'.

Q What was that?

A Well, I do not remember the exact figure, it was in terms of - I cannot give the exact figure.

Q Roughly?

A It was lower than Davies'.

Q It was lower than Davies?

A Yes.

Q So that taking it from Cook to Nauss or Hume, taking it from Cook, or your lowest to your highest, they were not

in very substantial agreement, were they?

A Well, if you will remember, you took this last sentence, but it refers to the preceding sentence, "There is substantial agreement between the several estimates submitted to this Board on these proved fields." Now, we did not consider Jumping Pound as a proved field.

Q That does not refer to Jumping Pound at all?

A No, it refers to proved fields. That last sentence refers to proved fields.

Q Tell me this, Mr. Lewis, if this grid system that a lot of people have been talking about became effective it would be not only effective for export but it would be effective as well for domestic use, wouldn't it?

A I do not think the grid system would be feasible from a financial standpoint for the Province as a whole, at least not for many years to come. It would necessarily have to be tied in with a considerable export line.

Q What I am getting at is this, if it were established the gas would probably be taken for export from the same grid system as would supply domestic consumers, isn't that correct?

A That, I believe, is the intent of the company that proposes to put it in, and it seems to me that is the logical thing to do.

Q I mean, if it was all going to be put into one pool, it would be advantageous to probably have a detailed study and an estimate of Jumping Pound, that is all I was getting at?

A I do not quite tie your statement together, Mr.Smith.

Q Well, if there was a grid system put in you would expect

Jumping Pound would be a part of it, at least a part of the system?

A Yes, I would think so, and if the grid system is going to go into Calgary you would have a connection with Jumping Pound through the lines which they are putting in.

Q And even with respect to your opinion as to the feasibility of a grid system, you would still say that you would want to make a full detailed study of Jumping Pound, having a grid system?

A Well, it is no use making much more of a study of Jumping Pound until we get more information.

Q I see. Then it is the lack of information?

A It is the lack of information, yes, sir.

Q Rather than your willingness to accept the other estimates?

A I might say at the time we started studying Jumping Pound that contract had not been made. At least, we did not know anything about it, so that when we first started this study we thought Jumping Pound would not be available, so that was our reason why we did not go into it much more. The reasons why we did not go into it much more were, first of all, the lack of information, and, secondly, that at a later stage we found it was committed.

Q Well, I won't press that further. Now, Mr. Lewis, referring to a paragraph on page 4, "The second category of gas reserves includes isolated wells and small fields, or fields remotely located to which it would not be economical to extend pipe lines, although some may become important upon further exploration." Can you give me one or two examples?

A Well, let's see. I think Mr. Hawthorn can do that better

than I can.

Q Well, I will leave it up to him.

A All right, fine. But I remember looking over the map and seeing a good many isolated wells, particularly in the Lower Cretaceous, that certainly nobody could afford to lay lines to at this time at least.

Q And you go on, "It also includes gas reserves associated with oil production, which for this reason would not be attractive for export." I take it you yourself have already mentioned some of those as examples?

A Yes. This sentence, I see now, is somewhat in conflict with some other statements in the report, and my answers. Apparently it was a little carelessly worded.

Q I am not being critical, but would you like to make an explanation of what you had in mind?

A Well, we had in mind in this sentence that some of these oil field gases that would not be available for many years, being tied up in the oil production. Now, for example, if you take a field in which they decide to reinject that gas back into the field, it might not, any of that gas might not be available for export for twenty or thirty years, and that probably is what we had in mind when we wrote this sentence.

Q I see. And if there is a grid system put in it might be available at an earlier date, I take it?

A I do not think that would be affected whether or not there is a grid system, and I do not think that would be affected whether the gas would be reinjected as a measure of conservation.

Q The grid system would not help this at all?

A No.

Q Now, Mr. Lewis, you say, "The third category includes the other fields which presumably can be made available for export." Can you give me an idea of what you have in mind when you say"the other fields"?

A Well, it means other fields which do not fit into the first two categories.

Q Yes?

A And you will find in Mr. Hawthorn's part of the report a listing of the fields and the reserves which we have set up for that and most of them are probable reserves.

Q Well, I mean, or I take it that some of those are at Pincher Creek and at Princess and so on, is that correct?

A Yes.

Q And we will find what we call a listing in Mr. Hawthorn's part of the report, what you call a listing?

A Yes.

Q I wonder if you could refer me to that listing?

A Yes.

Q Have you got it there?

A Refer you to what?

Q To the page in Mr. Hawthorn's portion?

A Well, the tabulations behind page 22, and the tabulations back of 26.

Q Now, 22 does not refer to that, surely, does it?

A These tables are not page numbered.

Q Well, maybe I can take that up with Mr. Hawthorn, and that will save our time.

A Yes.

Q At the top of Page 5 you say this, Mr. Lewis, "For the con-

venience of the Commission," and by that I take it you mean this Board? You are so used or accustomed to using the word "commission"?

A Yes, we are accustomed to the word "commission".

Q Somebody was talking to you about commission yesterday, and they did not mean this Board at that time?

A I understand.

Q What you mean is for the convenience of this Board?

A Yes.

Q "We have further segregated known reserves into geographical groups to show their adaptability to the several proposed export lines." Can you refer me in the submission to where you have segregated these known reserves into geographical groups to show their adaptability to the proposed export lines?

A Yes. We have divided these into areas, the Southern area, Mid-way area, Edmonton area, Eastern Alberta and Northern area.

Q I mean you do not suggest that you have done anything by way of allocating Pincher Creek, the Pincher Creek area to Mr. Smith, I mean his client, something to your own client, and something to Mr. Nolan's client? There is no suggestion of that?

A No.

Q Yes.

A Our intention was just to show the geographical distribution of the reserves and how they might fit in with these several proposals.

Q I was just wondering. The language indicated to me that you had something that would show that one applicant could

get gas conveniently here, and another one conveniently here. There is nothing in that suggestion, is there?

A No, but I think anyone that knows anything about the proposed lines of the applicant can figure that out in a general way.

Q Perhaps you will give us your own idea, and your clients', the people that have you here as a witness, Western Pipe Lines, where you would expect them to get the gas from?

A Well, with the grid system their natural source of supply would be to start a line from Pincher Creek and go across the southern part of Alberta to Saskatchewan, and join the route which they set up.

Q You mean they would start taking from Pincher Creek and pick up gas at different points going East?

A They would start taking from Pincher Creek and pick up a package of gas at the lowest cost in the gathering system.

Q I take it you are aware of the fact that a number of these applicants have their eyes on Pincher Creek, Mr. Lewis?

A Yes, I understand there is competition for it.

Q Now, I won't bother you with the next thing that was partially dealt with.

A All right.

Q Referring to Figure B, following Page 5, Mr. Lewis, you have a curve showing accumulated gas reserve trend, production not deducted. Do I understand this thing correctly, for if I understand this thing correctly, we have a total of 9 trillion reserves with the production not deducted. Where did we get that figure from?

A That was a compilation, as I testified yesterday, of reserve estimates put in originally by Spooner and in

recent years by Nauss and others. These markings here were not intended to be exactly accurate. The whole purpose of these figures was to show trends.

Q I was not criticizing.

A I may explain possibly that while the 9 trillion seems larger than any of the estimates that have been made, this 9 trillion includes the gas which has been produced so far.

Q Yes?

A In other words, it is the discovered gas irrespective of whether it is still in the field or been wasted or whatnot.

Q Then with respect to Dr. Hume, if I remember correctly, he was a great gas-in-place man, and did he ever go that high?

A No, he did not because his estimates were as of today. You want to remember that a large quantity of gas has gone out of Turner Valley.

Q You took his plus Spooner's and added to that what you found had been produced, is that right?

A This is supposed to represent the gas which has been discovered, originally in place, and does not exclude gas which has been taken out.

Q I am not being critical of it, Mr. Lewis, but I want to know how you arrived at it? Is it correct to say that you have taken Spooner and Hume, primarily, and added to that the gas that has been taken out, and that is how you arrived at the point you have?

A That is right.

Q I see?

A It is not intended to be accurate; it is to show trends rather than statistical information.

Q Now, turning to Pate 6, Mr.Lewis, about two-thirds of the way down the page, a little better then half, starting with the word "However"in the middle of the second paragraph; do you see that?

A Yes, I see it.

Q "However, it cannot be expected that they will ever be as large as the Texas reserves as the formations underlying Alberta do not have as much gas capacity per square mile as in Texas." Would you expand on that a little, Mr. Lewis?

A Well, I had previously made a comparison by areas, surface areas.

Q Yes?

A And brought out that we are not far apart in the areas which are promising for gas. This statement is to bring it out so far, and I think the geological evidence is sufficient by reason of the exploration of a large enough part of the area, and I think it is very unlikely taking it square mile by square mile on the average that it will have nearly as much gas in Alberta, that is, the areas on the average will have nearly as much gas in Alberta as in Texas. I did not want to imply and leave the implication when I compare it by areas that I was stating or setting up that the Province would likely have a reserve of the order of, I don't know what it is, 125 trillion or something of that kind, which has been assigned, which Texas is believed to contain. I do not think it will.

Q But it is from studies, information and data that you have received with respect to Alberta that you made the statement with regard to reserves that "It cannot be expected

that they will ever be as large as the Texas reserves as the formations underlying Alberta do not have as much gas capacity per square mile as in Texas."

A That is right.

Q Is that correct?

A That is right.

Q And did you have in mind any particular area in Alberta, such as the Foothills or Central Plains or generally?

A It was a general statement applied to it. Some areas might compare very favourably with the best areas in Texas, but on the average I do not think it is going to average out nearly as much.

Q You still think it might be pretty fair or pretty large in fairness to all concerned?

A I think it is going to be large, I do not know how large.

Q Referring to Page 7, in the middle of the page, starting with the words "The faith that experienced oil companies"...

A Yes?

Q Do you see that?

A Yes, I see that.

Q "The faith that experienced oil companies have in the opinions of their geologists on the potentialities of the Province is evidenced by the millions of dollars being invested in the Province." Just one remark with regard to that?

A Yes.

Q In your experience in dealing with oil companies, they are, of necessity, great gamblers, they have to be?

A Well, in one sense, yes, but the big oil companies are not gamblers in the main sense because they do their business

on such a large scale that the element of chance is largely eliminated. It is just like life insurance. If I took a policy out on you, that would be a very risky proposition.

Q I might fool you?

A But if I took out policies on ten thousand risks, it ceases to be an important risk.

Q Of course, insurance is the biggest gambling racket that we know of?

A But the insurance companies as a whole are the soundest investments we know of.

Q That is because of a difference in risk, not because they are gambling. Some of the gamblers are the best risks we know of. But what I am getting at, they spend a lot of money on chance where other businesses do not?

A Yes.

Q Oil companies have to do that?

A Yes, they take their chances.

Q You have heard the story about the 35 yards for the nightgown, Mr. Lewis?

A I am afraid I haven't.

Q I will tell you the story at adjournment.

A All right.

Q Continuing down that paragraph, you say this, "Though no one can reliably forecast when, where or in what amount gas reserves will be discovered each year, the general result can safely be relied upon and in that sense are not speculative." That may be so with respect to a major pipe line but would the results be sufficient for bankers and people like that? Maybe you dealt with that yesterday?

A I dealt with that. The bankers have a different view than

the geologists.

Q Quite, but I take it that the bankers would not quite agree that those results would be sufficient for them to put up the money?

A When I make a report that is to be used for financing, I have got to approach it from the viewpoint of the bankers rather than from my own. There are a great many things that with my own money I would be perfectly willing to do, but on which I could not persuade the bankers to do anything.

Q Probably you have heard it said that the Board will have to view this, with respect to protecting the Province, from the same viewpoint that the bankers do?

A If they are going to grant a definite permit I think they have to consider whether the applicants will have a chance to bank it. On the other hand, looking ahead at the Province as a whole, many years ahead, they can probably look at it the same way that the oil industry does. As I brought out, if they stopped now, that is, the oil industry, and insisted on twenty-five or thirty or forty years of definite reserves proved up for oil, there would not be any business. They have been operating for years and some of the soundest investments, the most attractive investments you have in the country, are these same oil companies which operate on a large enough scale so that these risks are evened out. That is the position that the Province is in.

Q Probably you are talking policies?

A I am replying to your question. I think it is a proper reply.

Q You are talking about the policy for the Province?

A That is what I believedthat your question was directed at.

Q It was not intended that way. However, let us carry on.

A All right.

Q I think you told us from the present information, study and conclusions that presently you would expect the Board, assuming they have such jurisdiction, at the moment, in any event, if a permit is granted that it should be made conditional, is that correct?

A I think so. I think, aside from the reasons that I mentioned, that at least it seems to me that if they do grant a permit even if they are satisfied that the reserves are banked, each one of these projects, with the possible exception of Montana, it would require that they go to the bankers and go to the Federal Power Commission, and even Montana would have to go to the Federal Power Commission, and if for some reason, I do not know what it might be, they refused to give a certificate of convenience and necessity to serve any markets in the United States, why, any permit which the Board here could give or the Dominion could give would not be of any effect.

Q I thought yesterday you implied a certain condition?

A I gave a different reply and different reasons.

Q Further exploratory drilling?

A But what I am saying now is, that regardless of the other reasons, it looks to me, at least to my limited knowledge, what it should be is, in effect, a limited permit, because they cannot assure you up here that the permittee will necessarily get a certificate from the Federal Power Commission.

Q That is right?

A Possibly that could be worked out in conjunction. I do not

know how that is to be considered.

Q But, as I say, one of the conditions you mentioned yesterday was further exploratory drillimg?

A You have got this same problem of which comes first, the hen or the egg, and if we do not give you a reasonable assurance, if I go out, for example, and spend two or three hundred thousand dollars in drilling wells to prove up reserves, I am going to get a return on my investment in a reasonable time or I am not going to do it. I am not going to have it sit there, not have it in any idle investment.

Q You mentioned that later?

A Yes, I mentioned that later.

Q Let us carry on. I want to ask you a question about that later. Turn to Page 9, will you, Mr.Lewis?

A Yes.

Q The last sentence of the second paragraph, starting with the word "exploration"?

A Yes.

Q Do you see it, sir?

A Yes, I see it.

Q "Exploration of the area is still at an early stage and discoveries which will be made in the future will, without question, greatly overshadow the present known reserves." When you use the term "will, without question", I take it that is a question of opinion, a matter of opinion that you are giving?

A Yes, these conclusions, of course, are my opinions, and Mr. Hawthorn's.

Q I was just thinking about the words "will, without question",

I was just wondering about that?

A You might put it without question on our part, because I think everything in here, all these conclusions, it is implied that it is our opinion. When we say "without question", that is our opinion.

Q To a great extent you are an opinion expert, just like everyone else who gave evidence here, but it does not mean anything more because of the form that you have set it out there?

A No, I think it is clearly implied here.

Q And the same thing applies later on when you say "Both from geological studies and from comparisons of the exploration histories of older areas of like promise, it is certain that the reserves so far found are only a minor fraction of the total."

A Yes, in our opinion we consider that to be so.

Q Now, on Page 10, the first sentence at the top of the page - the second sentence, excuse me, "About two and three-quarter trillion cubic feet of this is either owned outright or committed to local gas distributing companies serving the various municipalities of Alberta." I take it you have nothing to add to what you have stated about three times with respect to that?

A I think that covers it.

Q Carrying on, "A small portion of this two and three-quarter trillion cubic feet is in the probable class and under option rather than contract." Have you anything to add more than what you have told us?

A What we wanted to bring out there is that the problem is mainly in the Jumping Pound field.

Q Problem?

A The probable is mainly in the Jumping Pound field, and we also had in mind with respect to Jumping Pound and Leduc a possibility that the full reserves were not definitely tied up.

Q That is what you have explained before?

A Yes. We have made some rather strong statements which we find ought to be qualified to point out that we did not know whether these reserves would be fully committed in the end.

Q Well, you have already explained that?

A Yes, I have discussed that.

Q Two or three times?

A Yes.

Q I am just about through, and will be in two or three minutes. Our adjournment time is getting closer. Referring to the last paragraph on Page 10 - well this might be a good time to adjourn. It might take as long as the two or three minutes Mr. Fenerty suggested yesterday.

(Hearing resumed after a short adjournment.)

Q Mr. Lewis, maybe the adjournment permitted me to shorten up what I had intended to ask. There is a statement on page 10, the last paragraph, being paragraph 6 on that page, and you say this: "Of the 2-1/3 trillion cubic feet of gas reserves available for export, probably not more than one-half can be considered to be proved at this time and the fields will require systematic drilling to provide the information needed to prove all the reserves. Still more drilling will be required to proved adequate deliverability." Do you know whether or not Western Pipe Lines propose to do more drilling?

A No. What I had in mind there was that the owners of the property would do the drilling;unless Western Pipe Lines bought the property I do not suppose that they would do any drilling.

Q What I had in mind is you do not know whether they propose to do any drilling, that is Western themselves?

A I cannot answer for Western Pipe Lines. They will have to answer for themselves.

Q I just wanted to know if you could or not. You have no information with respect to it?

A I have not heard anything as to that. I do not imagine they would. There would be no reason. It would be up to the owners of the property to drill the wells.

Q I am not arguing with you. Let us go to page 11 and in paragraph 7 at the top of the page you say: "We doubt whether the operators will risk drilling the necessary wells until assured of a waiting market Until an export permit is granted, it would appear that such assurance

"cannot be given." Do you know whether Western Pipe Line have any assurance?

A You mean whether I have any assurance that they are going to get a permit?

Q No, any assurance from any operators that the operators will carry on this drilling if Western is granted a permit.

A Only the incentive. The same conditions exist in the States, in representations made before the Federal Power Commission, invariably you have a set-up of an assumed drilling programme but you cannot commit the companies who own the properties to drill those wells. You can argue and it has been accepted if you can show that it is to the interest of the owners of the property to drill the wells and that they can make a satisfactory profit, that those wells will be drilled and the Federal Power Commission has accepted such evidence time after time.

Q What I am getting at is this, Mr. Lewis, do you know whether or not Western has any agreements with any operators to the effect that if Western gets a permit to export gas that the operators will carry on this drilling? Maybe you do not know?

A No, I do not have any information on that.

Q Referring to paragraph 8, that is where you deal with what might be eventually available and you refer to your various percentages of deductibles such as gas lost in field and so on, and you arrive at the average for the Province of approximately 85%. Was that figure arrived at by study of particular fields or some general calculations?

A The only thing I could do is to make a general statement.

That figure covered not only the fields now developed and the wells developed but besides the wells to be drilled and the fields to be developed in the future. I could not do more than make a general statement.

Q Have you made any study of fields now developed?

A Yes, we studied various fields.

Q And have you allocated a certain percentage to them?

A No, you cannot do that. What you would have to do to arrive at a figure like this would be to work out each field in detail, which cannot be done, and weigh each factor in every such field to find the reserves and that is impossible.

Q That is a proportionate figure?

A Take in the Jumping Pound field, you can measure the deductible percentage in respect to that. At least you can make a number of assumptions and the Jumping Pound should be considerably lower than it is.

Q What I am getting at is we have conclusions by way of percentages with respect to particular fields led as evidence in other hearings?

A This conclusion is a study of such information as we had for the Province and based upon many years experience in many other fields. It is largely a judgment figure.

Q Now regarding that first part that only 60 to 90 per cent of the free gas reserves regularly found in the fields etc. etc. and then you come to this 85%. Is this 85% figure in substitution for the 60% to 90%?

A They are not the same thing.

Q Probably I misunderstood you. What is it?

A The 85% refers to the preceding sentence. The percentage of gas reserves that ultimately can be marketed to pipe

lines will be the smallest in the Foothills fields and greatest in the Cretaceous fields of the Plains. The average for the Province should approximate 85%. That will be much less than that in the Foothills fields and in some of the Plains fields there is going to be a larger figure. The average is going to be below the point of ultimate ratio of Cretaceous gas to the Foothills gas.

Q When you say approximately 85% that is based upon information you have now?

A That is right. It is subject to error. Possibly it is too high and possibly it is not. It would be near enough to being right that at this time it seemed to us to give a reasonable measure of expectation.

Q I do not suppose you would care to give any possible percentage of error one way or the other?

A If I could do that I possibly could make a closer estimate. I do not think it is going to reach 90%. On the other hand, it might possibly average out at 80%. For one thing that affects it is conservation. If much gas is wasted that would lower the figure. And a great many other things. There is no way in which you could make a precise estimate at this time.

Q I was wondering if we could get any closer than that?

A You cannot do it, no.

Q Referring to page 12, and this point has been covered by Mr. Fenerty at least and possibly some others, paragraph 12, at the bottom of the page. "The gas reserves now committed to market within Alberta are in excess of 30 years requirement, based on an estimated demand in 1960 of 78 billion cubic feet." I think you told Mr. Fenerty that you

accepted the figure from Exhibit 42 previously put in in some other hearing?

A That is correct. They got the 78 from that.

Q If I remember correctly you made no detailed study yourself to see whether that figure would be the same figure that you arrived at?

A You mean the study of future markets?

Q Yes?

A We made no such study of future markets.

Q Did you compare anything in Exhibit 42 with other areas or territories in the States or any place else? Did you make any comparison with any other areas that would assist us?

A How would I compare it?

Q If you could find some place similar to, say, the City of Edmonton, you might be able to make some comparison with some place else as to growth?

A I do not know how that could be done? You have extremely variable rates of growth in various cities and I would not know what I could compare it with.

Q I was wondering if you could. Did you look at the City of Edmonton's submission?

A No, I did not.

Q And then there is no use is asking you whether or not they did not arrive at a higher rate for the City of Edmonton than the Gas Company did?

A The only thing I have looked at myself is this Exhibit 42 and the original Dinning Commission Report.

Q And aside from that there is nothing you can do to help us?

A No.

Q You did not go any further in this submission did you? Well, that is all.

CROSS-EXAMINED BY MR. McDONALD.

Q Could I ask Mr. Lewis a question or two, Mr. Chairman? When Mr. Nolan was questioning you he was referring to the matter of a grid system in Texas. As I understood your answer you referred to California and that is to distribution systems. Can you tell me is there a grid system in Texas now along the lines suggested by my learned friend's client?

A You mean for gas?

Q For gas?

A I do not know of any, I do not think any exists there.

Q There is just one other item you mentioned. You recommend that the most vulnerable markets be secured first?

A Yes, that is my opinion.

Q That of course is on the assumption that the two or three markets that are available will eventually be secured, is it not?

A I do not know whether they will be eventually secured or not. I think within a few years it would be desirable to secure them if you can for the gas which I anticipate will be needing markets in the Province.

Q Is not the approach to the problem to decide which of the two or three markets that are available will be available in the future rather than the one that is immediately available?

A That is one of the matters which I presume the Commission

will take into account.

Q There is just one point here and that is of a very general nature. I assume that the gas, the marketable gas reserves at this time, they are 6 trillion cubic feet. We will take 6 as a round figure.

A Very well.

Q With 1000 BTU to a cubic foot.

A Well it is considerably higher than that, I believe.

Q Well we will take it as 1000?

A I will assume that.

Q My calculation on that is if you take 6 trillion cubic feet at 1000 BTU per cubic feet, that is equal to 1 billion barrels of oil at 6 million cubic feet per barrel?

A Yes.

Q I think you carry your decimals away out to the fifteenth part. Would you agree with that?

A If the decimals are right your conversion figures of 6000 cubic feet to 1 barrel of oil is approximately right.

Q So that in the Province of Alberta, on the assumption we have 6 trillion feet of marketable gas, we are in a condition where our gas equals 1 billion barrels of oil?

A I think that is right. I have not checked the decimals but it sounds right.

Q Are you aware of the fact that the permit to build the inter-provincial pipe line to Lake Superior was granted on the presumption that there was a reserve of oil equivalent to 1 billion barrels?

A I did not know that specifically. I have heard from those who are in a position I think, or whose opinion should be

listened to, that the reserves in the province are now in excess of 1 billion barrels of oil proved up.

Q Thank you.

Q MR. MARTLAND: Mr. Lewis, in connection with an answer which you gave to my friend Mr. Bruce Smith on cross-examination, you made some reference to the application to the Federal Power Commission by the Northern Natural Gas Company?

A Yes.

Q As I understand it, the Northern Natural Gas Company, on that application, in fact were there as an intervenor?

A I have since found out that the application was by another company and that the Northern Natural Gas Company in that case acted in the capacity of intervenor and opposed it.

Q On the basis they were entitled to that market area?

A I do not know on what basis.

Q Now just one word with reference to some of your answers to questions put by Mr. Mahaffy. You were dealing with the production of gas from various types of fields, condensate fields, oil fields and dry gas fields, and pointed out that with respect to the first two that production ought to be at a fairly level rate, whereas in dry gas fields it could be varied more readily?

A Yes.

Q Have you in mind, because of the position in the Province as a whole, would it be correct to say that you picture from a conservation angle the function of dry gas fields , might become as peak load suppliers and as a possible means of storage for gas?

A That is the way I envision this situation here in the Province, that in effect the Cretaceous gas fields will be surge tanks to meet peak loads and provide storage for the other two classes of fields that will have to be produced at a steady rate which is likely to be in excess of summer demands and on the other hand, will not be adequate to supply peak loads in winter.

Q Bearing that in mind, what have you to say from a conservation point of view as to the desirability or otherwise of an export scheme which contemplated taking gas out of the Province exclusively from dry gas fields?

A Well I think that would be difficult to work out and might even defeat the purpose, at least it would hinder the purposes of conservation. I have not given it any great thought but as I see it right now in order to provide storage you would have to be shoving gas into some of these dry gas fields anyhow, so in effect what you would be doing would be, if you are going to conserve all the other gas, you would be shoving one kind of gas in some of the wells and taking the original gas out of the other wells and eventually you would be producing out of those fields the gas that originated in these other types of supply.

EXAMINED BY DR. GOVIER:

Q I would like to ask you one or two questions, please. On page 15 of your report you have defined the terms "proved" and "probable". I wonder if you could indicate to the Board how those definitions would compare with the ones used by the American Petroleum Institute and the

American Gas Association and also with the one which was accepted by the Federal Power Commission.

A Well, I think that definition would be accepted by the Federal Power Commission. Of course it might be argued as to just how far proved gas - that is, you will find one engineer will only give 160 acres around a well and another one would be willing to give much more than that. I must confess as far as the definitions of the A.P.I. and the Natural Gas Association, I do not remember them at the time. I would not be able to answer that question. Those are definitions which I have used throughout my career and in my experience in contact with others, are about the definitions which are generally used. You cannot draw any sharp line between proved and probable.

Q However, the Federal Power Commission takes cognizance of gas as proven and probable?

A They do, to varying extents. In some cases they have given a lot of weight and given certificates to lines which had a rather short reserve in terms of deliverable gas. In other cases they have drawn it pretty tight. Generally if you think you can maintain from visible supply say 15 years, that they will then be willing to grant that new discoveries will make up for the deficiency for the last few years, provided they are well convinced that you are deriving your supplies from areas in which that is a safe assumption.

Q I see. Another question dealing with the sentence on page 16, Mr. Lewis. I realize that that is material that Mr. Hawthorn actually read out but I notice - -

A It is one we worked out together so I think I can go into most of it.

Q You say, just towards the end of the main paragraph on this page: "Coupled with experience and good judgment to provide data adequate for estimating reserves within small limits of error." I realize my question is not completely fair, but I wondered if you could indicate to us more or less what the limits of error might be. Would they be in the order of 1% or 2% or in the order of 5% to 10%?

A It would be much more than 1% or 2%. You might say good estimates and afterwards they are proved to be good estimates, if you come within 10% that is pretty good. I can probably illustrate that by experience. I have been making reserve estimates of a large field in Texas and in the initial years we had to make all the estimates by the porosity method. We did not have too much data to go on. In recent years we have had enough production and pressure data and we have had a check in total of about close to a trillion cubic feet and the check came out to within 2% or 3%. That was an average, because it involved many reservoirs and some reservoirs were considerably under and some considerably over. But in a large way in that case it checked out very close. Of course it was aided in this way that it so happened those reservoirs were not affected to any material extent by a water drive. Otherwise we would not have been able to get a check of the pressure drop or the material balance method.

Q Would it be fair to say this, so far as proven reserves are concerned, while any individual gas estimates might be

out say 10% or even 20% on the aggregate, the average of the reserve estimates might be reliable within say 5% or something of that order?

A 5% is a little hopeful.

Q What figure would you suggest?

A I would prefer to be more conservative and say around 10%. You will notice for example in comparing - it is not a direct comparison, but we have made the comparison between ours and Hume's estimate, and although we differ quite importantly in various fields we come out in the end with pretty much the same. It is just along the line of what you were speaking of, you may have differences of opinion but when you are dealing with enough cases and you are sound in your thinking, you are pretty apt to come out with pretty close agreement and the more cases you deal with, the less possibility of errors. The most dangerous estimate that an engineer has to make is on a single well. The more wells the less apt he is to err.

Q Another question with respect to the matter on page 18. You remember that Mr. Fenerty asked you about this sentence which reads as follows: "In types of reservoirs similar to those so far discovered in the Devonian at Leduc and Redwater, gas/oil ratios of several thousand cubic feet per barrel can be expected within a few years after production starts." Now, Mr. Lewis, despite the fact you answered Mr. Fenerty, I still do not understand the statement and I would like to ask you more questions about it.
First of all what do you mean by a few years, 3 or 4 years or 10 or 20 years?

A I would say less than 10years. I had in mind about 5 years. As you know, it is going to vary. These build-ups in gas/oil ratio may start up immediately in some fields and in other fields they may not start for 10 or 15 years and will not become important. In some fields they will not become important for 10 or possibly 20 years, depending on local conditions.

Q But you suggest as examples Leduc and Redwater. We have been under the impression that at Redwater, where the crude oil is saturated and where there seems to be very good evidence of a strong water drive, that would never happen.

A I think I covered that in my other evidence elsewhere. In this sentence we should have referred back to those other statements. What we had in mind - it is rather carelessly stated here - was that Redwater was a type of field in which there was no gas cap and the oil was unsaturated. We should have put that in here with that exception.

Q I see. Then you would not apply this thing to apply to Redwater?

A No. Well, certainly not to any important extent. You will not get any gas/oil ratio there until probably the very last stages and that may be 20 or 30 years hence. As a practical matter you do not have to worry about Redwater I do not think.

Q There is another question which is relevant to some of the material on page 18. Can you help us, Mr. Lewis, in giving us the benefit of some of your experience along the

lines of what minimum size of field can economically be tied into a grid system or to a market at various distances. My question is poorly expressed. If you understand it, you can go ahead. If you do not, I will try again.

(Go to page 258)

A I do not know whether I can give you specific answers but I was trying to remember a standard which the Tennessee Gas Transmission Company applies in Texas, and they worked it out on the basis of so many cubic feet of reserves will support so many miles of pipeline.

Q That was the sort of figure I had in mind.

A I am sorry to say I have forgotten just what it was. Do you remember?

MR. HAWTHORN: I do not remember.

Q DR. GOVIER: Never mind.

A We can try to obtain that for you.

Q Well, if you did have any information of that sort it would be helpful to the Board in trying to assess reserves on various geographical locations.

A We will try to get something together that will be helpful to you.

Q Somewhere in this submission, I do not recall the page, you referred to the 25% of open flow as the legal allowable. My understanding, Mr. Lewis, is that in the States of Texas, Kansas and Oklahoma some other scheme is in use. I wonder if you could tell us about that scheme or those schemes and tell us what you think of them?

A Well, in Texas the 25% is in the statutes, in the Conservation statutes, but actually when the field gets down to the point where it becomes a matter of either abandoning the wells or allowing them to produce more than 25% of the gas, the Commission has permitted the taking of gas in greater quantities, and I presume they justified it on the basis that it is in conservation because in the

last clean-up stages nothing can be hurt by taking large quantities of oil because there is nothing there to be hurt. On the other hand, why leave gas in the ground, such gas in the ground which can be produced. Now, I do not know whether that is justified legally. Possibly it may be considered that the Act is conflicting in that it expresses the main purpose as being conservation, then sets out a standard. In such a case, the main purpose of conversation should prevail. I do not know on what legal basis it is done but I know they do it. I am not fully informed on what is done in Kansas and Oklahoma but I would think, and I understand they do, in similar cases they do permit the taking of more than 25%.

Q Do you know whether in the State of Texas the actual production allowable assigned to a gas well is the 25% of open flow or is that the allowable calculated in some other way?

A Well, the allowable is calculated in another way. The 25% is a limitation factor.

Q It represents the maximum?

A Yes, a limitation factor, not to be exceeded except under the circumstances I mentioned. There are many fields in which the actual production is less than 10%. In fact, that is usual. Sometimes actually less than 5%, particularly in the early stages of the development of the field where pressures are high and well capacities are very large.

Q What I am getting at is this, Mr. Lewis, do you feel that the Board would be wise in looking at the deliverability

picture in the future with the 25% of open flow yardstick or do you think the Board might consider some other yardstick?

A I think the Board will find that initially the wells will be produced at less than 25%, it won't be necessary. In the latter stages of depletion of the field then they are going to be confronted with this problem we have discussed, whether to adhere rigidly to the 25% and leave gas in the ground or permit the 25% to be exceeded in order to get the fullest recovery from the reserves. This 25% originated years ago. Under present conditions it is what you might call a fossilized idea, it does not apply. There are some fields where you should not even allow it to produce 25%, in others it would not hurt it to let them produce everything that comes out of the well itself. The reason it goes back to, oh, I have seen laws that were made I suppose before the turn of the century, and in the early days of the gas business in Oklahoma. In Oklahoma, Ohio and Indiana they found when they allowed them to produce the wells wide open it frequently would draw on the water and apparently by some common agreement,they did not know why and did not have anything to go on, they just hit on this 25% and it has been repeated time after time without any real rhyme or reason to it.

Q I understand that another method, where a well is produced at a certain percentage of its shut-in wellhead pressure, is in increasing vogue in the United States. Do you know about that method?

A You are talking now about allowables. They have various

ways of making allowables for both oil and gas in Texas and in other States too. It has been a process of trial and error trying to work out something that would be universally applicable but so far it is not. In many fields that has been just a straight per well allocation, other fields that has been in proportion to pressure, other fields they have had an acreage factor in there. Now, while the Texas law, I understand, is not the law of ownership of gas in place, it is a law of capture, yet it has been a tendency to recognize that each operator should be allowed to take out a quantity of gas equivalent or in proportion to the gas in place, and most of these regulations, allowable regulations, have been directed towards working that out and there have been various schemes for trying to work it out. One way which has been suggested, and probably it would come about as close as any to working it out, was that each operator would get his proportionate share, would be to allocate a certain pressure drop so that if that is done and the wells are more or less uniformly spaced that would probably come about as close as any to working out a quantity production of gas from the reservoir. But its difficulty would be in a practical way, you are selling quantities of gas and not pressures.

Q So far as our problem here is concerned, you feel that the 25% of open flow yardstick is an adequate one with which we should judge our future deliverability?

A Well, personally I do not think a 25% has much to do with it. You may for administrative purposes have some standard which you have got to set up, but I think there

are many cases, or maybe some cases at least, where you should not allow wells to produce as much as 25%. To get a well in the field where the sand is underlain by water and you produce it too heavily you are going to cone that water up into the well and hurt it. In specific cases I do not think you should allow anything like 25%. The limitation should be on what the well will produce without damage to the well itself and to the reservoir, and that is not always the same. There will be other cases, as I said before, where you could just turn them wide open and you would not do any harm to the reservoir.

Q I have one or two questions in connection with Exhibit 7, Mr. Lewis. Should I ask you those?

A What is Exhibit 7?

Q "Principles and Methods used in Estimating Future Deliverabilities of Gas Wells."

A Yes, you can ask me that. Unfortunately, I have not read it for a year or so.

Q I understand you wrote it though?

A Yes, I wrote it, but I do not remember everything I said.

Q One question is with respect to page 9. At the conclusion of the first paragraph you say:

> "Any slopes that do not fall between N = 1.0 and N = 0.5 are known to be in error."

I wanted to ask, Mr. Lewis, whether you applied that criterion to the basic data on which you developed the deliverability schedule shown in Exhibit 6?

A The basis of that is that the two types of flow, the laminar flow and the turbulent flow for gas fall within extremes of

N = 1 and N = $\frac{1}{2}$, so theoretically any flow which falls outside of those extremes must be in error, either that the data on which it is computed is in error, the computations are in error, and physically I believe it is well agreed among those less qualified to pass on that, and I am not, that these limitations exist and if they fall outside of them then you have reason to believe that something is wrong with it.

Q I believe the Texas Railroad Commission takes exactly those same, do they not?

A I think they do.

Q I appreciate the point you brought out but I was just wondering whether you had applied that criterion to the basic data on which the deliverability statements on Exhibit 6 are founded?

A I am not sure that I know what you mean.

Q Well, let me be more specific. Let me turn to Exhibit 6. Maybe this is a question I should be directing to Mr. Hawthorn, I am not sure, but on page 34 and following you present data on deliverability for typical Pincher Creek wells.

A I believe you had better direct that question to Mr. Hawthorn. I did not prepare those statements.

Q All right. With respect to page 12 of Exhibit 7, near the top of the page, you point out that:

> " The influence of liquid saturation in the sand pores is to reduce their effective permeability for the flow of gas."

I was wondering, Mr. Lewis, if you could help us at all

in connection with what may happen in the future at Pincher Creek and Jumping Pound. We understand that there is some danger that there may be retrograde condensation in the reservoir in those two fields.

A Well, there will be, I think, beyond any reasonable doubt, and the result would be that you would have some obstructions in the formation around the well which will reduce its capacity to deliver gas. On the other hand, in Pincher Creek, being a limestone reservoir, it is subject to treatment and in one well they did treat they got such fine results and could get by repeated acidization, could get other results, I do not think it is a highly important matter, but there is always this question of what is going to happen on the characteristics of a well in future. Sometimes they get better and sometimes they get worse, and on the average the tendency is for the characteristics of a well to become worse, and in our own work we make some allowances for that. On the other hand, we are finding out more and more about how to treat those wells and keep them going. Now, sometimes when a well is completed initially, and this often happens, at least within the first year that the formation is clogged with mud, and I have seen wells that increased materially in their capacity for several months and even several years after completion, so you can not make any exact calculations. We have always tried to weigh that as best we can, and I think on the whole that the chances for betterment, particularly in view of the advances in technique, just about offset the other.

Q Would you say that even where there is serious danger of retrograde condensation?

A Yes. We have to deal with many fields in which they have retrograde condensation and we have observed that you may go through a period like this for about a year, you will have an increase in capacity due to the cleaning out of mud and drilling fluids, then they set up the effective of dropping your liquid condensates in the pores of the formation around the well and you may get an increase, then you get a levelling off. That is what I remember most commonly in retrograde fields.

Q On page 18 of Exhibit 7, Mr. Lewis, you discuss here the need for pressure installations when the working well has pressure which falls below the pipeline pressure, and you make reference to the method of estimating them. One question I have is to your very last line, you say paragraph 7. Are you referring to monograph 7, the very last line on page 18?

A "The method for computing the chart is given in paragraph 7."

Q Because I could not find any paragraph 7.

A I never noticed that before. Do you know what that refers to, I don't.

Q Well, perhaps you might let me know about that later, Mr. Lewis.

A I would be glad to do so.

Q The other question I had in this same connection is, have you taken into account the need for delivering gas into a pipeline in your estimation of the abandonment pressures

for various fields, which of course would be tied in with your estimation of the reserves in these fields? Shall I start again?

A I did not follow the question very well. Would you mind repeating it?

BY THE REPORTER READING: " Q. The other question I had in this same connection is, have you taken into account the need for delivering gas into a pipeline in your estimation of the abandonment pressures for various fields, which of course would be tied in with your estimation of the reserves in these fields?"

A Is your question directed towards Exhibit 6?

Q Yes?

A Well, I think you had better ask Mr. Hawthorn that. Well, I will let him answer for himself.

Q Thanks very much, Mr. Lewis.

Q THE CHAIRMAN: Mr. Lewis, you informed Dr. Govier the Federal Power Commission would accept 15 years proved reserves on the balance of the term of probable supply. Then it was mentioned previously that the Federal Power Commission in certain cases would issue conditional permits with the idea of additional reserves being proved up within a specified time. Now, under what circumstances would a conditional permit be issued? Would it be in a case where they only had 10 years proved reserves and they would have to bring it up to 15 years before the Commission would confirm the permit, or could you give us just some idea of when they would issue a conditional permit to enable additional reserves to be proved up?

A It is very evident from the various opinions handed down from the Federal Power Commission that they do not have any uniform standard. In one case they have drawn it pretty tight, another case allows quite a bit of leeway. I do not know what the basis of their decision in any one of the cases is but I suppose it is based on looking at the picture as a whole and deciding whether the applicant has a reasonable chance to bring their reserve picture up to what they would consider acceptable. I understand, and I think I am right on this, that in one case a permit was given where the applicant could not show more than 12 years' deliverability. That is more than 12 years reserves but they could not maintain the estimated rate for more than 12 years from the reserves which they submitted in their application. And I know of other cases where they refused certificates when they had more than 15 years. Now it may be that the statement is not based entirely on the reserve picture, they may have had other reasons. They certainly do not have any standard that is based upon reserves alone.

Q About what length of time would be normally allowed to prove up additional reserves when the conditional permit is issued?

A Well, from those cases that I know of that has not been standardized. Sometimes those deficiencies are not matters of reserves and sometimes they are matters of dealing with markets or some other phase of it. But there is one case where a so-called trunk line, I believe they allowed them quite a long time to go back and find the reserves, and

another case with the Transcontinental Pipeline my recollection is they were given only 60 days. I would say that has to be judged by the circumstances. Now, in this case, for example, I might mention that you would have to - - at least, it would be my opinion if you were going to do that here on the theory that you have to allow those fields to be explored, you would have to take into account how long it would take to explore the fields, otherwise it would not mean anything one way or the other.

Q Do you care to express any opinion as to what the terms would be here or the time allowed?

A Well, I think that would depend to some extent upon which applicant it was. Each has a somewhat different circumstance.

Q Would it not, though, be up to the companies, as you pointed out before, producing the fields? Say if we would like to see some kind of assurance particularly where the deliverability involved drilling a large number of wells, as to whether or not these companies producing in the field would be prepared to drill that number of wells, whether they would think it would be economic or not?

A I do not think it would be necessary to firm up the reserves altogether, a basis on giving a final certificate for a permit, whatever it may be, to drill up enough wells to get all the deliverabilities.

Q No, we realize that. I merely pointed that out. You mentioned it would depend on the applicant in this case as to how long they might be required. Would it not more or less depend on the companies producing the field, what

program they would undertake?

A I presume you could go at it two ways. One of them would be to let the applicant make his claimed statements as to what time would be necessary, as to what he could persuade the companies to do, and say whether he could try it. Another way would be to bring the companies in and see what they would be willing to do.

Q But you would not care to express any opinion at the present time as to what would be a reasonable length of time to handle such a thing?

A I would think it would be a matter of policy. It would be my judgment that you look into the circumstances and give them a reasonable length of time and then review it, and if you see they are close enough to what was desired, why,give them an extension. I would draw the first permit rather close so that you would not be tying up things unduly, and if they are not making progress, chop them off and give it to somebody else. If they are and you think they can fulfil their requirements,within a reasonable length of time, let them go ahead. I do not know whether that is good legal procedure or not.

Q I do not know whether we would do that or not. We just wanted to get your ideas on what would be a reasonable length of time.

A I would say this. We have looked at it in Western Pipelines but I would think probably by some time next summer - - of course, you can not do much drilling here in winter, I understand, with the exception of Pincher Creek where the wells are so expensive, possibly could not

persuade the companies there to stick their necks out on more than one or two wells at a time.

Q Thanks very much.

DAVID G. HAWTHORN (recalled)

already sworn, cross-examined by Mr. Fenerty, testified as follows:

Q Mr. Hawthorn, I am still somewhat intrigued at the approach to questions we have here as disclosed at pages 5, 11 and 12. While it is not your language, I know you are familiar with it and I feel that it places the picture fairly before the Board. At risk of repetition, I want to again refer you to the language in the middle of page 5 as to local requirements, and the requirements for financing pipelines. I have reference to the sentence saying:

> "Having witnessed the exploration and building up of proved reserves in other regions, we attach much more importance to the potentialities of such a region with respect to the future needs of Alberta than to what reserves the few wells have so far discovered. However, having participated in the initiation of a number of large gas lines, we are fully cognizant of the need for proof of enough deliverable gas for long enough to enable a pipe line to be financed....."

And then, at page 11, paragraph 9:

> " A more important question to an export line

"is the percentage of gas that can be economically recovered during the life of the mortgage bonds which finance a large pipe line."

Then you go on to refer to 20 years. Then again at page 12, in paragraph 12:

"In view of the evidence on the potentialities of the Province, it would appear that the Province can safely rely upon future discoveries for their more distant needs."

Now, I gather, I say the accumulative effect of those remarks, that you feel that while the residents of this Province can safely rely on future developments for future needs, the requirements of those who finance the pipeline are such that you must be able to show pipeline companies deliverable gas, pipeline gas now in quantities which will finance or which provides for the retirement of bonds on the period of 20 years in order to meet financial impositions. That is correct, is it?

A You made one misquotation.

Q Oh, did I? All right.

A That we think that the Province can safely rely on future discoveries for their more distant needs.

Q Yes?

A That means subsequent to these 30 years of proved reserves that we are talking about here.

Q I see. Then you feel then that you should show or should be able to show pipeline gas for provincial requirements for that period, say of at least 30 years, before considering any gas for export?

A I don't understand your question, Mr. Fenerty. You said "pipeline requirements", for pipeline and provincial requirements. Now, which do you mean?

Q Well, I will tell you. I am just wondering whether you have been fully instructed as to the facts of life in relation to gas in Alberta. By the facts of life, I mean Government policy. I am just beginning to wonder if you have and I am going to explain something to you. I know I have been a voice crying in the wilderness but I have been endeavouring to get someone to approach this problem in what I conceive to be a method applied by the Government if you are going to get anywhere, and that is that you will first show that there exists and does exist sufficient gas reserves to meet the present and future domestic and industrial requirements of this Province.

(Go to page 273)

Now, I am not going to go to fifty years, I am going to take twenty or thirty, whatever you think should be, we will leave out the fifty years, and I have suggested a period, and I have hoped that something would be coming out on this inquiry, or someone would be coming on this inquiry who would proceed on that basis of calculating present pipe line gas, known reserves, sufficient to meet those requirements over the period we might talk about, say, thirty years, and then tell us what was left of pipe line gas for export. If you will look at the Government requirements, which refers to export and linked up with surpluses,and I am suggesting to you that you and everybody else has linked up the internal requirements with surpluses, and you are going to have your actual proven contract requirements for export, and there is nothing left over, isn't that your whole approach?

A Mr.Fenerty, I think our whole approach has been identically just the opposite from that. Our whole point in our report has been to try to separate what we think of as the proved reserves committed to the Province as opposed to the probable reserves, as we have called them, that might be available for export.

Q Yes?

A And that is very clearly set out in our summary tabulation where you see gas that is not available and in brackets the committed gas. In other places in the report that committed gas is expressed as being mostly proved and you take 2 trillion, 970 billion and divide it by 78 billion a year and you will come out with 37 years' supply of committed gas, most of which is proved.

Q All right, now, then....

A Now, in addition to that we say of your 37 years that for the more distant needs we think the Province can safely rely on future discoveries.

Q Yes?

A One other thing. That is the third point. We have separated out what we considered gas not attached, available gas, gas that can be considered as available for pipe line, and at the same time we have expressed that it is mostly in the probable class, probably not more than half of which is proved, and have set that up as gas and separated it out as gas which might be considered available for pipe line.

Q I see. Could you do some arithmetic for me now?

A Glad to.

Q Or give it to me later?

A All right.

Q Having again in mind these letters we have, and the necessity, I take it, of first providing sufficient gas reserves now existing, known to exist, to meet the present and future domestic and industrial requirements of this Province, and, if you like, say thirty years, so that you have something to work on?

A All right.

Q Can you tell me now what you would allocate to meet that requirement of the Government and how much gas of the kind required for financing you have left? That is the thing I want? I cannot get anybody to tell me?

A I thought I had just substantially told you that.

Q Give me figures, so many billion taken and so many billion left, that is what I want, just figures? No use of us

talking if you cannot meet it. There is the requirement. You give me the billions that will meet that Government requirement and how much you have left of proven pipe line gas. That is what you have got to meet. Can you do that?

A Do you want me to repeat the same figures I have just told you?

Q No, I just want you to end up with the balance you have got left for export, and I do not care whether it is thousands or billions.

A 2 trillion, 251 billion.

Q 251 million?

A 2 trillion, 251 billion.

Q That is the balance for export?

A That is the gas presumed to be available for pipe line.

Q That is the gas presumed to be available for pipe line?

A Yes.

Q That is the total, is it?

A Yes, that is the total.

Q How much of that must be allocated to what I think is a prior supply for internal consumption to meet your thirty-year requirements?

A None of it. We have done that already.

Q Just give me the arithmetic. You say that is the balance. Give me your initial figure, will you, on the amount of gas that will provide pipe line requirements for this Province for a period of thirty years, your estimate?

A You have already had it, 2 trillion, 970 billion, according to our estimate. 2 trillion, 970 billion.

Q That is pipe line gas?

A Yes, that is right, most of which is proved.

Q And that is, in order to ascertain the amount available for export, you take that from the total pipe line gas now available, do you, and find the balance?

A Substantially so, yes.

Q Would you give me the total figure? Make the subtractions?

A Which figure do you want?

Q You have got now pipe line gas available from proven areas of how much?

A I still do not know just what figure you want.

Q I will tell you what I want. You are going to end up with two figures for pipe line gas which together are going to total the amount available, those figures are going to total the amount required for protection for thirty years and the balance for export, and they will total to a certain amount. That is what I want?

A 2 trillion, 970 billion cubic feet of gas.

Q For?

A For the Province.

Q Yes? Now, the committed?

A Practically all proven. Subtracting that from a total of 5 trillion 614 billion, and you get substantially what is obtainable, there is a little there for extraneous gas, that is geographically remote, and subtract that from the total, and you get 2 trillion 251 billion cubic feet.

Q Those are the figures for pipe line gas, not in place?

A That is rigt, marketable gas.

Q Yes, I see?

A Marketable gas.

Q That is on the basis of a grid system, and that is as given by Lewis and your own figures?

A The grid system has no connection with it.

Q And can be available for local consumption?

A That is a transportation problem, that is not a reserve problem.

Q All right. We have your gas, you have given us your reserve that is available?

A Yes.

Q To illustrate what I am talking about, where is your thirty-year supply for the Canadian Western of pipe line gas?

A Turner Valley, Jumping Pound, Foremost and Bow Island.

Q That gives you about twenty, I believe, years' supply, doesn't it?

A Yes.

Q Where is the rest?

A Slightly more than twenty years.

Q Where is the rest of it? I mean, I want to know where each area will get its supply?

A Where is the rest of what?

Q Of your thirty-year supply for Canadian Western?

A I did not say there was thirty years' supply.

Q I did not say you did. I am asking you where the rest of it is? You have given me twenty, I want the other ten? You said you had a supply of pipe line gas for the Province for internal consumptiom for thirty years, and I say where does the Canadian Western get it for thirty years, that is simple?

A Some place else in the Province.

Q Oh, yes, and that costs money, doesn't it, eh? We are going to pay more for gas to Canadian Western because of the fact that you export from adjacent areas, are we?

A I do not think that that necessarily holds.

Q You do not know, do you?

A I have told you that is my opinion.

Q I say, you do not know whether it holds or not?

A No, I haven't made any computation.

Q Now, again until we find out what those areas produce, and the conditions of the production and the size of the wells and the extent of area, nobody can tell what that is?

A That is right.

Q That is right?

A Yes.

Q And one thing that you have got to have, you have present proven areas with firm contracts, and you have got to know relatively what your gas is going to cost you to meet competing fuels in your market, isn't that so?

A I did not get the point of your question.

Q See, I am just asking for information,you know?

A Yes.

Q I have a habit of stating a thing as being so, although I am really asking a question, and if I ask it that way you take it that these are all questions and not statements of fact?

A All right.

Q We have heard a great deal about waterborne fuel oil competition along the Pacific Coast, and we have been told very frankly by many witnesses in the other cases that they have got to meet those prices if they are going to sell gas, and we have been told that they have got to have a reasonable amount of industrial load to get a high load factor into the pipe, or a continuous load factor in the pipe, and in

the case of industrial loads the competition with other fuel is important, the price they have to meet. Now, I gather that your principals are freer from that, shall I say, as you have very little fuel oil that is waterborne, having regard to the competitive price, but you have got some fuel competition. You have got to meet Minneapolis and St. Paul if you are going to get an industrial load, haven't you?

A That is correct.

Q That is correct?

A Yes.

Q And there is no use building a pipe line unless you can get a load?

A That is correct.

Q And you must, and I understood you had made some computations as to what you would have to sell gas for to meet that competition in Winnipeg, Minneapolis and St. Paul, at least I hope you have, haven't you?

A Who, me?

Q You?

A Who, me?

Q Not you?

A Not me.

Q Not you?

A No, not me.

Q I see. You do not know anything about those figures?

A No, sir.

Q Have you made any computations as to what you would have to buy gas so that you would be able to export it and sell it?

A No, sir.

Q Oh, I see. I see.

A That is not the title of our report here.

Q You have not gone into that yourselr?

A No.

Q I thought perhaps you were the man? I am having considerable difficulty to get that. You are not alone. I have the same trouble with everyone that comes here giving evidence. I guess I had better leave you on that point. You just do not know anything about that, do you?

A No.

Q All right, we will leave it. We will leave it. But, is your understanding of pipe line financing, and I gather you have some knowledge of that?

A That is correct.

Q The report seems to suggest that you have?

A Yes.

Q That those financing pipe lines, one of their requirements is a firm committal from proven areas for sufficient gas to finance the retirement of bonds within fifteen or twenty years representing the cost of the pipe line, is that one of their definite requorements?

A That is right.

Q They have got to know something about what that gas is going to cost?

A The bankers go into the economics of the project,sure.

Q And one reason that they are not willing to rely on these future supplies, and you say that this Province can rely on, is because nobody knows what it will cost, isn't it? It is pretty obvious, isn't it?

A I do not exactly know whether I understand what you mean by

"cost" or not. Now, do you mean what price it can be bought in the field for?

Q Yes? That is it. Well-head prices?

A Well-head prices?

Q Yes? They have got to know something about that, don't they?

A That is right.

Q And the position then is that if these export projects proceed, we will have definite prices that the exporter is going to be committed to, and that the residents of Alberta are committed for the future to supplies that may cost double the present supplies, and nobody knows that and nobody cares, that is it, isn't it?

A I do not know.

Q When I say "nobody" I mean the applicants. That is what you have got, isn't it? That is the chief reason, or the reason you have got to have these firm committals? It all follows logically, doesn't it,or perhaps you do not think so? In any case, I will leave it, if you do not think you can answer it, but can you answer it?

A I do not have any suggestions on it.

Q All right, all right. Now, just a couple of small matters here, just for my own information. I was interested in Page 10 of the submission. Again that was not your work. Just a minute, will you? I have lost it. I have got the wrong citation. You did refer to the gas production associated with oil wells being of particular importance, more particularly to the Province of Alberta, that is what I wanted, particularly within Alberta, isn't that at Page 10? You remember that, don't you? I had it marked on

Page 10.

MR. S. B. SMITH: It is on Page 12.

MR. FENERTY: I had it marked as on Page 10, it is on Page 12, I am sorry.

Q On Page 12 it says, "An important factor in supplying the future demands, particularly within Alberta, will be the gas necessarily produced from oil wells that must be given first access to markets." Why do you say particularly within Alberta with reference to gas in association with oil wells? I just want to understand that. Why any more in Alberta than for export, that is what I mean?

A Because one reason is the mechanics of producing it. It is low pressure gas and it is more susceptible to being used with less expense and cost in communities than the high pressure gas.

Q Than the high pressure?

A Yes, that is one of the reasons.

Q Is there any other?

A I think that is the principal reason.

Q Now, this gas associated with oil in itself is not particularly adapted to areas such as Alberta where we have a bad load factor, I mean a bad domestic load factor, a very bad factor, I mean temperatures. My understanding is that your period of lowest production of oil in such communities is probably the time that you require your peak load of gas, that is so, isn't it?

A Well, oil well gas is usually produced quite continuous and at a uniform rate.

Q I thought there was a difference in production between winter and summer in such a province as Alberta with

its extreme temperatures? I am not sure, you know, but I thought that was right?

A I think substantially the gas/oil ratios are the same in winter as in summer.

Q However, your main reason for emphasizing particularly in Alberta is that you get it in low pressure lines and you do not need high pressure lines?

A Yes, it is more compatible to nearby markets.

Q Now, on page 12, looking at the last sentence, "Moreover, Alberta is exceptionally well protected by other fuel resources, chief among them being coal, oil and tar sands." We have wood here too, do you know that?

A I guess we missed that.

Q And to me, if that means anything, it is meant to be an argument as to why there should be an export of gas, isn't it? That is the reason that you put it there?

A In considering the question of exporting gas, yes, sir, that is an important consideration.

Q It has the effect of saying that even if we do export our gas, we won't freeze to death?

A Well, that is a good statement.

Q And do you think that is a fair argument to advance here? Do you think it is a reasonable argument? Mind you, you are not the only man from the South that has advanced it. I want you to tell me if it is reasonable and in any way consistent with Government policy?

A I do not think it is inconsistent with Government policy.

Q Which Government?

A The Government of Alberta.

Q Now, that is serious. You were serious or you wouldn't

have put it there. What you say is that we should not be too much concerned about export, if we have expectations of it, because we can get along with some others, and I think you should have included wood, to be logical, shouldn't you?

A That is right. That is in many years hence if the gas reserves petered out.

Q Yes.

A You still have these other fuels.

Q You think we should know?

A You are very fortunate to have them, I might say.

(Go to page 285).

Q And we should worry, the bonds have been retired. I get the idea. I just wanted to make sure that was it. Now on page 15. I think these are some of your comments, Mr. Hawthorn. At the bottom: "Since matters of experience and judgment are involved two estimators given the same evidence may at times differ widely, particularly with respect to probable reserves." Unfortunately we find they differ more or less widely in the proven reserves, don't we?

A Less widely.

Q Yes, less widely. And they differ widely as to what is proven and what is probable. They usually group them together.

A It is all relative.

Q The point I want to make is this. We have that difficulty and we understand the difficulty because after all a geologist cannot get down to the bottom and investigate everything. But if you are going to be reasonably conservative and insure supplies for any given time, is not the only safe way to take the minimum competent opinion for each area?

A The answer to that question would depend upon the exact circumstances and upon many things associated with it.

Q And what you thought of the other geologists, I take it.

A That might have something to do with it.

Q But assuming they are reputable and widely experienced geologists, and they differ widely, is not the only safe thing to take the minimum?

A Possibly the wise thing we would do in other cases, we

would take the average. The average would be a perfectly good thing to consider. We average men's opinions.

Q You think the Board cannot go far wrong if they take the average opinion here?

A I think it would be a pretty sound idea.

Q I see. Now, you will remember that I misunderstood Mr. Lewis' testimony when I suggested that he was allocating or dedicating certain proven reserves to certain consuming areas. He told me, if I remember rightly, on page 140 of Volume 2 - I asked him at page 140: "Q. Let us take reserves, for instance. I notice you have in effect allocated certain areas, certain proven areas, to certain consuming areas. For instance, you have allocated, in effect dedicated, Jumping Pound to the Canadian Western distribution system? Answer: You are wrong there. We did not try to dedicate anything, we simply took the information which we had as to what we understood was committed to various communities."

I want you in connection with that to refer to the language you used on page 31: "In considering the exportation of gas out of the Province of Alberta to other Canadian provinces and possibly into northern parts of the United States we have assumed that the present tation of estimates showing the ability of dedicated gas reserves to deliver required supplies of gas would be desired by the Petroleum and Natural Gas Conservation Board." Are you referring to the dedication of gas to export?

A That is correct.

Q Yes. You do require that some of this Alberta gas should

be dedicated to the export, do you?

A It will have to be allocated, contracted for or the equivalent of that before a pipe line can be built.

Q Yes, and do you see any reason why any of these particular reserves should be dedicated to local consumption, or just for export?

A It is a matter of whether you consider the word dedicated or committed.

Q I am using your word, dedicated?

A That is in connection with export.

Q Yes. I understand that. Now should we have any dedication in connection with local consumption?

A Dedication - -

Q There is no doubt about the export?

A There is a fine distinction between dedication and committed. If it is under contract you might call it either committed or dedicated to the services of the pipe line.

Q Should we have anything dedicated to Calgary consumption?

A That is in the supposition that it is committed. It is committed under firm contract to Calgary, is it not?

Q And should we have any wells dedicated to meet that other ten years that you have not got for the Calgary consumption. If so, what?

A That has to be worked out by negotiation. If you want more committed to it, it has to be worked out.

Q You have to have a grid system?

A That is one solution.

Q Again that costs money, does it not?

A Yes. That is correct.

Q We have got down pretty much to one thing haven't we? If you are going to have a local consumption adequate for 30 years combined with export from proven areas adequate for 20 years you are going to have a grid system of some kind, aren't you? That is your conclusion, is it not?

A It would be desirable and efficient to have a grid system we believe.

Q As a matter of fact, let us be perfectly frank about this thing, in your view a grid system is a necessary incident to this export proposition?

A Will you repeat your question?

Q Yes, it is a question. Is it your opinion, so that there will be no question about a statement, that if you are going to have adequate and complete protection for local consumers, combined with export, you have got to have a grid system. Is that your opinion?

A I do not think it is entirely required. As I have just finished saying I think it is highly desirable.

Q Why would it be desirable if not required?

A Well I do not see that there is any relationship between the two.

Q You would not want to give it to us if it was not required and sell it at the cost, would you?

A There is a difference between it being required and being desired. There are lots of things that are desirable that are not exactly required.

Q Is it desirable at any price?

A I do not get the meaning of your question.

Q Have you any idea what a grid system will cost?

A Yes, sir.

Q And knowing the cost you think it is desirable?

A Yes, sir.

Q And do you tell me that your own honest opinion is it is not necessary if you are going to have export and complete protection?

A I think it could be worked out in other ways but not as efficiently as the grid system.

Q Do you think it would cost less with the grid system than without it?

A I think it could be done more efficiently and therefore in the direction of being more economical for all the parties interested.

Q All right,then, if you are going to have this thing handled in the most efficient way, if you are going to have both adequate consumption and export, you must have your grid system, is that fair?

A Again I repeat that it is not entirely required.

Q No, but I say if you are going to handle it in the most efficient and economic way, if you are going to have both local consumption and export, then you must have a grid system?

A That is right. If you are going to have the most efficient system I think that would be it.

Q And then you come to the conclusion as you must, I think, if you are going to do this in a sound, economic financial way, export necessitates a grid system. We cannot get away from that, can we?

A If it is to be done most economically for the gathering of gas for provincial and export requirements.

Q Yes, I see. I thought that is the way it would work out. Now I had hoped you had something to do with prices, you know. You are quite sure we cannot get anything from you on prices at all?

A No.

Q All right, if I can't I can't. Now one more thing and I will be through. I will finish before one, I think. Now you know, I take it, there is a lot of competition around here about exporting gas from various interests. I think perhaps we can all reasonably agree that everybody is not going to get an export permit. They are not all going to export gas to different places. Can you give us any help in telling us why the particular scheme that is under consideration should have any preference above any other? I am asking that for this reason that it occurs to me that the undertaking - if there is to be export at all - that the undertaking that might be more helpful to local requirements than another would be perhaps given a priority. I am suggesting to you that somebody some day somehow is going to have to meet the requirements of the protection of local consumption both at a reasonable price and as to proven reserves. What bid have you got to make as to what you should do?

A Mr. Lewis went into that subject quite extensively this morning and my views would be the same as his. I have nothing more to add.

Q I was in hopes you would offer us something for local consumers that nobody else has yet offered in the line of protecting us as to reserves and prices. I am afraid you

cannot. You have not done anything about prices?

A Well I thought our report did just that to a certain extent in setting out what we classified as committêd reserves to Alberta markets, showing what they were and in no way, as we have expressed in the report, did it infringe on these reserves, in setting up other reserves, we considered were exportable surplus.

Q For instance, it might be decidedly helpful if you could find it in your heart to feel that if a grid system was a necessary incident to export it should be paid for by export. Can you go along that far with me?

A No, sir, not wholly by export. I think it would be highly beneficial to the systems, to the gas systems of the Province.

Q You are unable at the moment to tell us of any specific benefits or harm in the way of price or reserves that will flow to the local consumers as between the various schemes? I am just interested in local consumers at the moment. They are the only people who talk to me. If you can think of anything I would like to know it?

A No, sir, I have nothing to express on the different merits of the different systems.

Q I thought there might be something you might think of. Do you think it is worth while thinking of? It would go an awful long way if you had. If you think of anything try and give us some help.

A All right.

Q That is all.

MR. NOLAN: Before adjournment, I wonder if

I might make mention of a matter - because I take it there can be no more examination of this witness - and I do so now because tomorrow, I understand, is the last day on which the Board will sit this week and there will be an adjournment until next Monday, that is to express the hope that the Board will find it possible to render an early decision on the question of our future proceedings. We feel it is important that the American authorities be advised immediately as to what we propose to do in the way of accelerating the hearing. That I think would be the attitude that would be shared by most of the applicants, with, of course, the exception of the Prairie Company. It is very obvious that any delay that could be brought about here will redound to the benefit of the parent company in the United States. In other words, they have everything to gain and nothing to lose by delay in this Province, so I respectfully request, sir, in spite of the Prairie Company, that there be an early decision if the Board finds it possible to make one.

MR. S. B. SMITH: I join with my friend in suggesting that an early decision is advisable. As to delay in respect of the various companies that are before this Board I stand squarely on the record of the Prairie Company and the record of the other companies, which I read in detail here yesterday, sir.

THE CHAIRMAN: We will adjourn until tomorrow morning.

(At this stage the Hearing was adjourned until 9.30 A.M. 28th September, 1950.)

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